

1. Module details**Module name****New and Emerging Electrical Technologies****Module duration**

It is expected that students with the appropriate entry knowledge and skills will successfully complete this module in 36 – 40 hours.

Module code

NUE060

Discipline code**2. Module purpose**

This module provides an insight into new and emerging electrical technologies. Students will gain knowledge of the basic concepts of these technologies and develop an awareness of the problems that need to be overcome before they are adopted. Students will also gain some understanding of the likely impact of these new technologies on the electrical industry.

3. Prerequisites

Nil.

4. Relationship to competency standards

This module supports the Electrotechnology Industry Competency Standards in a general way. It provides students with a knowledge and understanding of technical developments in the industry; developments which competency standards must include.

5. Content**Multifunctional cables**

structure
application
adaptation problems

Field/control bus systems

purpose
advantages
components
simple programming

Optical technologies

optical fibre cables
optical based systems

Energy sources'

alternative/renewable
adaptation problems
energy storage technology
co-generation

	<p>Building services and management services management systems technological developments</p> <p>Generation, transmission and distribution generation transmission and distribution system management</p> <p>The electrical industry installation servicing/maintenance skills</p>
6. Assessment strategy	
Assessment methods	Written test (multiple choice questions, short answer questions), Practical exercises, Projects/assignments/reports
Conditions of assessment	Normally assessment will take place in a classroom environment.
7. Learning outcome details	
Learning outcome 1	Describe the structure and purpose of multifunctional cable.
Assessment criteria	<p>1.1 Show with the aid of a diagram, the structural components of a typical.</p> <p>1.2 Describe the current application of multifunction cables.</p> <p>1.3 List the advantages of multifunctional cables and their possible future applications.</p> <p>1.4 Describe some of the problems to be overcome in the use multifunctional cables.</p>

Learning outcome 2

Demonstrate a knowledge of field/control bus systems.

Assessment criteria

- 2.1 Describe the purpose of field bus systems.
- 2.2 List the advantages of a field bus systems.
- 2.3 Show, with the aid of a diagram, the components of a field bus system and describe the function of each.
- 2.4 Program an input device of a field bus system for a given function (eg a timing function for a light point).

Learning outcome 3

Describe the current developments and proposed application for optical fibre cables and optical based systems.

Assessment criteria

- 3.1 Explain an aspect of optical cable design currently under development.
- 3.2 Describe developments in optical based systems and how this might be applied in the future.

Learning outcome 4

Discuss the development and likely adoption of various energy sources.

Assessment criteria

- 4.1 Outline the arguments for adopting energy sources other than those in common use.
- 4.2 Explain the terms “renewable energy” and “alternative energy”.
- 4.3 Describe some of the proposed methods for obtaining electricity from renewable and alternative energy sources.
- 4.4 Describe some of the problems associated with adopting renewable and alternative energy sources.
- 4.5 Describe new developments in electrical energy storage systems.
- 4.6 Describe the principles of co-generation.

Learning outcome 5

Describe the services incorporated in buildings and premises and the trends in their development and management.

Assessment criteria

- 5.1 Explain the terms “building devices”, “building system management” and “energy management”.
- 5.2 Describe the services incorporated in a modern building and the function of each.
- 5.3 Explain how new technologies are impacting on the integration and management of services in buildings and premises.
- 5.4 Describe the problems associated with the adaptation of new and developing technologies in building services.

Learning outcome 6

Discuss the development of new technologies in the generation, transmission and distribution of electricity.

Assessment criteria

- 6.1 Describe alternative methods of those currently in common use, for generation electricity.
- 6.2 Identify some of the new technologies being adopted in the transmission and distribute of electricity.
- 6.3 Describe methods that can be use to remotely monitor and meter the case of electricity.

Learning outcome 7

Discuss the likely impact of developing technologies on the electrical industry.

Assessment criteria

- 7.1 Explain the possible changes to the installation of electrical systems in building and premises due to the adaptation of new technologies.
- 7.2 Explain the possible impact of new technologies on the devicing and maintenance function of electrical systems.
- 7.3 Describe in broad terms the skills likely to be needed with the adaptation of new technologies and the career opportunities they may provide.

8. Delivery of the module

Delivery strategy

Delivery strategies must be suitable for both theoretical and practical learning and the module purpose. It is recommended that learning and assessment be facilitated in a holistic manner which may require a learning outcome sequence other than that indicated in the body of the module

Resource requirements

Occupational health and safety requirements